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SCHOOL OF MEDICINE

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JOSEPH D. GRANT PROFESSOR  
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September 19, 1975

Dr. Robert W. Floyd  
Chairman  
Computer Science Department  
Stanford University  
Stanford, California 94305

Dear Dr. Floyd,

I am happy to have this occasion to record my unqualified endorsement of Dr. Bruce Buchanan's reappointment in the rank of Adjunct Professor of Computer Science. This status is a fairly new one at Stanford, and may be unfamiliar to some members of the department; it may be recalled that the title has replaced that of Senior Research Scientist (old-style), that it is a term appointment and also coextensive with available project funding, but that it has faculty prerogatives in a number of areas and was intended to be reserved for candidates of high distinction and national reputation. I am familiar with a number of holders of this title in the Genetics Department and elsewhere in the School of Medicine, and it is clear that Dr. Buchanan compares favorably with any of them.

My association with Dr. Buchanan has been a close one for almost ten years, in the framework of the DENDRAL project and in association with Dr. Feigenbaum. Anyone who has observed this effort has been impressed, if by nothing else, with its success as an interdisciplinary undertaking -- it involves participation by several people each from the departments of Chemistry, Genetics and Computer Science, and within the latter of a range of contributions from LISP-hacking to graph theory. While Dr. Djerassi, Feigenbaum and I will wish to take some credit for motivating this cooperation, it is but fair to say that it simply could not have worked without Bruce's breadth of understanding clarity and steadiness of thought.

These are indeed Dr. Buchanan's special qualifications, and they are particularly notable in a field like AI which may suffer as much from the exuberance and shortfall of critical judgment of some of its proponents as it has gained from the brilliance and inspiration of its pathfinders. Bruce does not display the level of innovative flash that one might seek as one of the criteria for appointment to the regular faculty and autonomous leadership of a distinctive area of research, although I suspect he would not be lacking in this mode were he to move to a different environment. As it is, he has been a perfect fit to the needs of our ongoing effort, and he has evidently found this also to be an excellent milieu for his own creative productivity. His fundamental interests are, after all, in the philosophy of the scientific method; and the DENDRAL project has been a unique context in which to put philosophical ideas to practical application as we see them tested by working scientists in a variety of fields. I have acquired the deepest respect for his wisdom and oversight over the entire project, and believe

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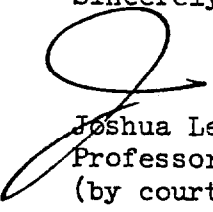
he will continue to make important contributions both to the substance of our efforts and to our understanding of the underlying issues involved in the mechanization of scientific discovery and inference.

Useful results from AI work are usually relegated to engineering, once they have been achieved, and academic eminence in the field is usually founded on appreciation for contributions to mathematics, logic, or linguistics. Bruce's forte along these lines is philosophical analysis, but coupled, as I have indicated, with an extraordinary ability to relate to a wide range of disciplines in surefooted, persuasive (and non-controversial) fashion. Consider how his published work has related to mass spectrometry, to graph theory, and to the law.

I am at a loss whom to look to for plausible comparison. N.J. Nielsen's name comes to mind as someone who has exhibited a comparable level of critical oversight of the field of AI, but has been undoubtedly less productive in terms of explicit applications (in a field that badly needs them to sustain its credibility). Bruce's role in the actual work of the DENDRAL group in the automation of chemical reasoning is faithfully documented by his place in the authorship of innumerable publications, and his reputation among philosophers by other letters in his file.

For the programmatic task which justifies an appointment to be filled by this rank, I am unable to suggest anyone of competing stature -- in a few years, perhaps, some of the junior collaborators now connected with the project might be thought of (Dennis Smith, Nancy Martin) -- but none of them would be nearly competitive at this time.

Sincerely yours,



Joshua Lederberg  
Professor of Genetics and  
(by courtesy) of Computer Science